

This application note will explain how to setup a live video stream to YouTube

The Camera Name Display software contains 4 virtual cameras that behave like a Windows webcam which can be used as a streaming video source, up to 1080p60

We will explain how to setup the video source

We will use the freely available 'OBS Studio' as an example streaming software and explain how to set it up for YouTube streaming

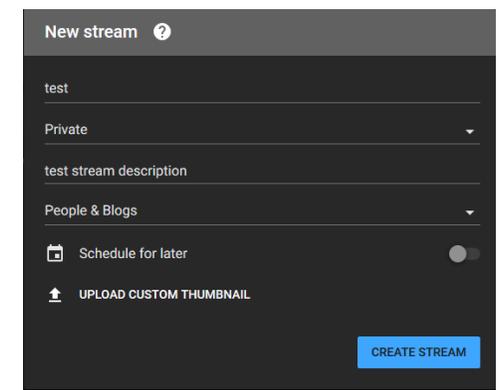
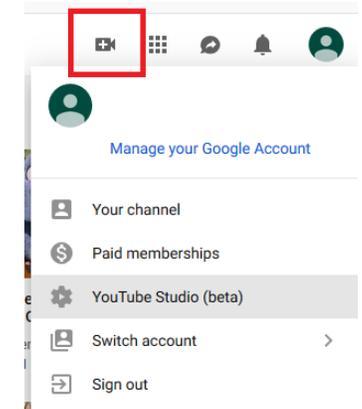
We will explain a first setup of the YouTube 'Live' environment

We explain how to setup YouTube here, so you can test all the steps discussed in this application note.

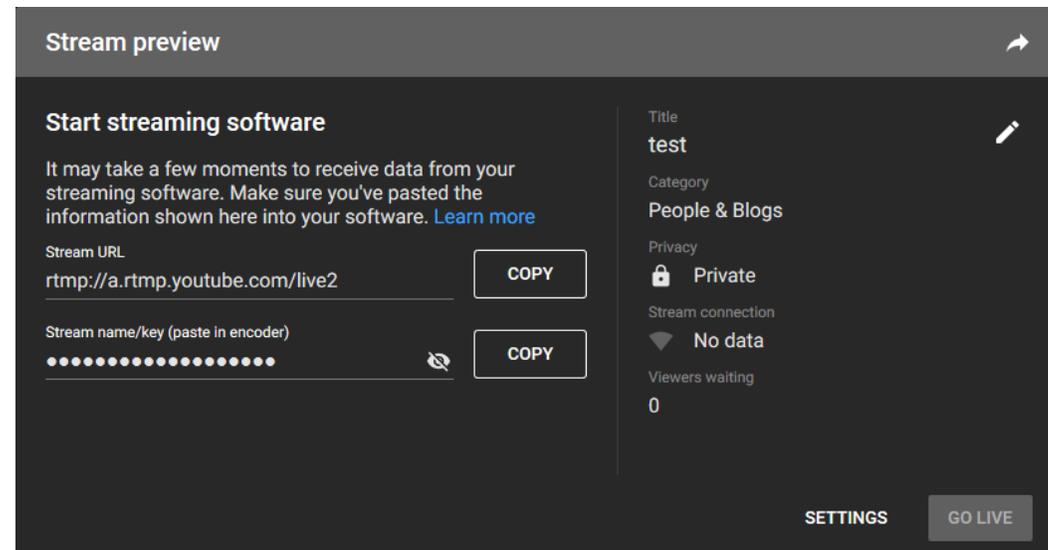
If you're already familiar with YouTube streaming AND you already know your 'stream key', you can skip this step.

Instructions:

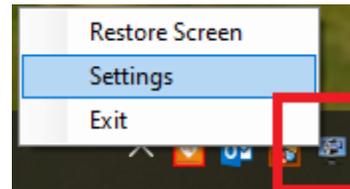
- Login into your Google/YouTube account
- Go to YouTube homepage. Then select 'YouTube Studio' from your account settings, OR already click on the '+' icon and select 'Go Live'
- Click on 'Stream' at the top of the screen.
- Fill in the stream details in the presented window. Then click 'Create Stream'



- You will be presented with a stream preview page, as shown below.
- A 'Stream name/key' will be provided. You will require this key to use in OBS studio.
- Before we can continue here, YouTube expects you to provide the video source stream first.
- Therefore please continue with the next steps to setup the Camera Name Display software and the OBS studio software.



- For the best encoding quality, we want to have the (virtual) camera resolution identical to the intended streaming resolution.
- Open the Camera Name Display settings. This can be opened by right-clicking the Camera Name Display software mini icon and select 'settings'. **OR** by clicking on the camera screen and pressing the F12 key



- Then select the 'Video Outputs' tab on top of the settings screen. (see next page).
- Within the output tab, select 'Output 1' in the DirectShow settings.
- Setup the intended streaming resolution and target framerate (30 or 60Hz for smooth playback).
- Keep the output format at YUV420 since nearly all encoding happens in this format.
- Close the settings, now you're ready to use third-party streaming software like OBS studio.



Camera and Name Display client settings

File Language Help

Camera Inputs | Effects | Position | **Video Outputs** | Speech Time | Connections | Recording /tmp settings | Dual Screen

Main Screen

- Run minimized
- Force display detection and desktop extension at start
- Show disconnected message
- Slow mode (advanced, default: off)
- 4K video processing (change requires restart)
- Debug test (default:off)

Screen output 1 settings

2 Display number. Main Screen (Camera + Layer)

Screen output 2 settings

Enabled Preview Quadrant View

Decklink display output requires 'Blackmagic_Desktop_Video_Window' drivers to be installed

Advanced: Output buffer (default 1)

Remote Client and MMD video output settings. Source for "MVI-CAM-video1" webcam

Streaming to remote devices Bitrate CPU Speed vs Quality Width Height log

2000 1280 720 Main Screen Source

Multicast video towards delegate devices like MultiMedia devices. Warning: Restarts software!, then choose net

Network Card for video multicasting (debug) manual

Directshow "New_VirtualCamera_1" settings

Output 1 | Output 2 | Output 3 | Output 4

1920 Video streaming/recording Width Output format Invert Y

1080 Video streaming/recording Height YUV420 Directshow advertiser framerate

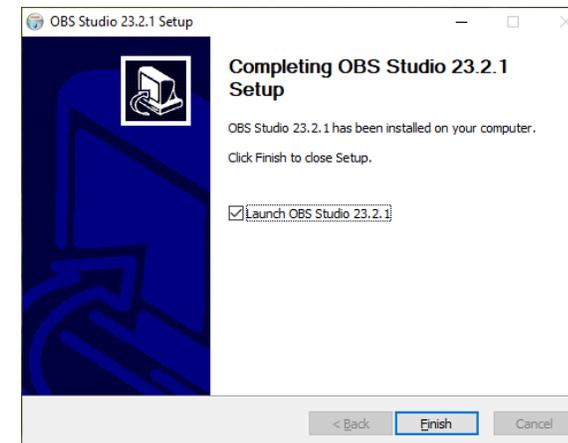
Main Screen Source RGB444 60

Use "Global" namespace. Allows services and other user access (change requires restart)

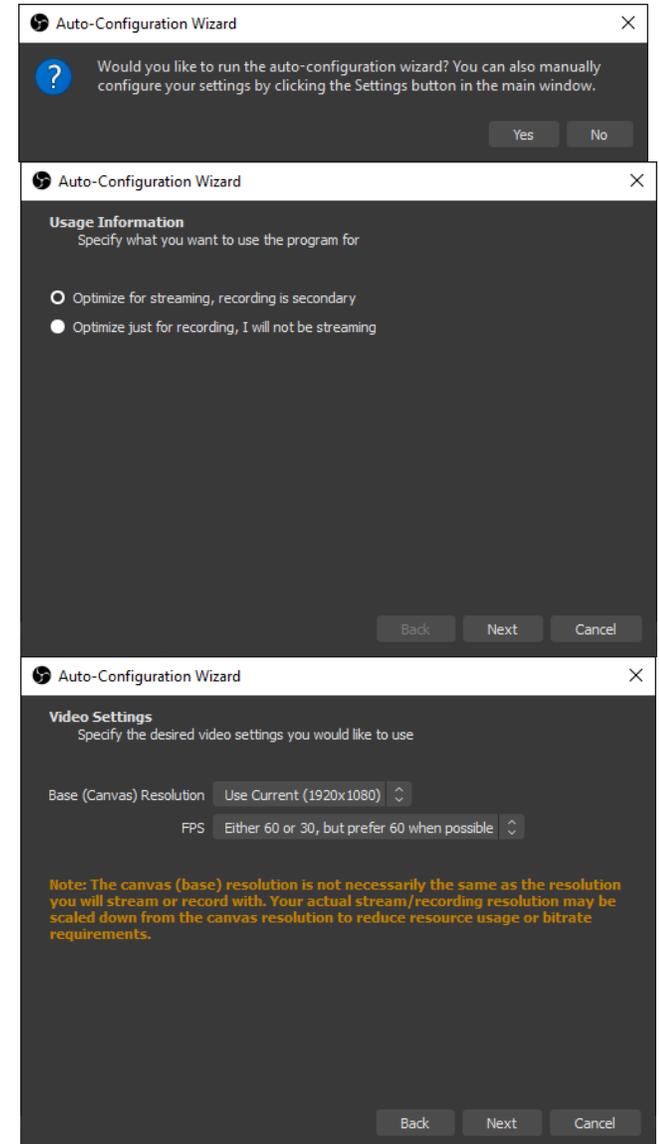
Debug

- (Debug) Show Frames Per Second
- (Debug) AddCameraActivit
- (Debug) Show big milliseconds counter
- (Debug) Toggle red/cyan for vsync testing
- (Debug) Test Worstcase Directshow output

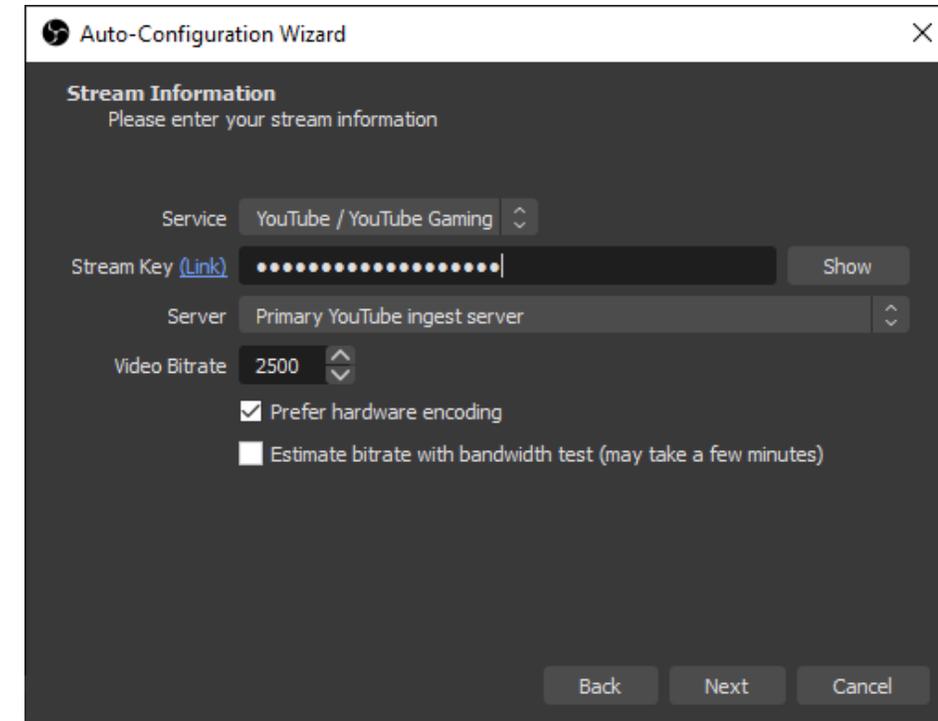
- OBS studio is a Google recommended streaming tool for streaming towards YouTube
- The software is free, optimized for YouTube streaming and easy to setup
- The software allows for NVIDIA hardware assisted encoding, keeping used CPU resources to a minimum, resulting in smooth running H264 encoding even at 1080p60. (just a few % CPU use)
Note: Minimum NVIDIA Quadro P2000 required (which is already required for the MVI-CAM software suite)
- The software can be downloaded through the OBS studio website:
<https://obsproject.com/>
- After installation, please launch the software:



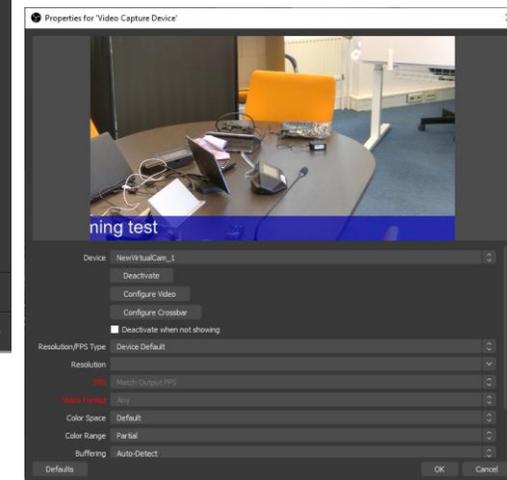
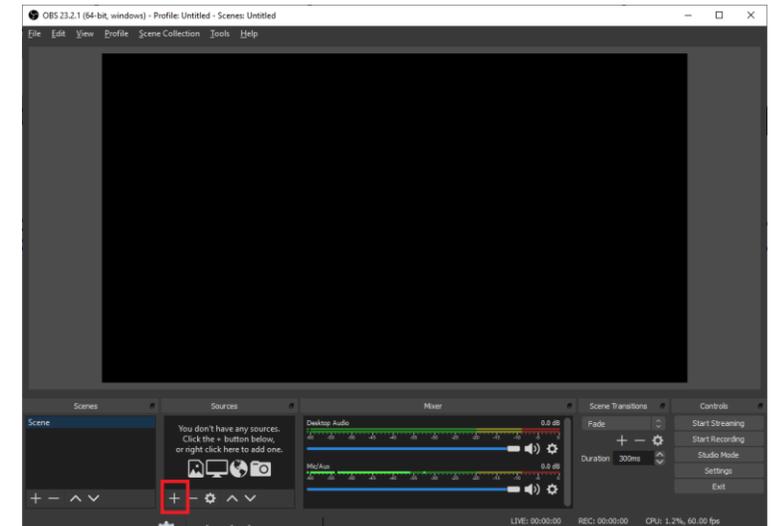
- When asked, run the Auto Configuration Wizard:
- Select 'Optimize for streaming'
- Choose your target resolutions in the following screen.
Note: This should be the same resolutions as configured for the camera and name display software in previous slides



- Select 'YouTube/YouTube gaming' as service
- Copy-paste the stream-key from the YouTube stream preview into the 'Stream key' field
- Configure your target bitrate. Google has a guide for choosing the correct bitrate here:
<https://support.google.com/youtube/answer/2853702?hl=en>
- Select 'Prefer hardware encoding' for real-time and low CPU consumption
- Press Next
- Press Apply Settings



- Within the main screen of the OBS studio software:
- In the 'Sources' window, click on the + icon.
- Select 'Video capture device'
- In the next window, press OK (or change the name)
- Select 'NewVirtualCam_1' as video source
- If you use an audio-card or Dante (virtual) audio source as your audio input, go to the bottom and click 'use custom audio device'
- Then select the audio source from the drop-down list.
- Press OK



- In the 'Mixer' window, optionally disable PC audio sources like desktop audio and/or mic/aux by clicking on the speaker icon.
Note 1: This will prevent your PC audio being mixed with the live stream(unless this is your intention).
Note 2: Keeping these audio sources enabled might risk acoustic feedback in your system or stream.
- Check that your 'Video Capture Device' is showing its audio volume meters and is changing its volume indication based on your microphone/audio activity.
- If correct, you are ready to stream! Press the 'Start Streaming' button.
- Check your live YouTube feed if it receives the video stream. If yes, you can Go Live in YouTube.
- Note: To compensate for lip-sync issues, you can add audio-latency to your audio sources by pressing the 'Settings' icon in your audio mixer and click 'Advanced Audio Properties'. Depending on your camera latency, this may be 200 ms to 500 ms you need to verify in the YouTube stream and adjust it when required

